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Chuanxiong Guo

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EXAMINER

DAFTUAR, SAKET K

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/828,400	<b>Applicant(s)</b> GUO ET AL.	
	<b>Examiner</b> SAKET K. DAFTUAR	<b>Art Unit</b> 2151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 31-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. Applicant's election without traverse of group 1 consisting claims 1-30 in the reply filed on February 11<sup>th</sup>, 2008 is acknowledged. Therefore, claims 1-30 are presented for the examination.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 21-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 21-30 are directed towards a system comprising first and second means for interacting as respective peers in a peer-to-peer system. It appears that claims could be implemented using computer software only as disclosed in paragraph 102 of specification. Therefore, claims also lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d

at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994).

Merely claiming nonfunctional descriptive material, i.e., abstract ideas stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because “[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.”).

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-20 rejected under 35 U.S.C. 102(b) as being anticipated by Hanson et al. US Patent Number 6,546,425 B1 (hereinafter Hanson).

As per claim 1, Hanson discloses memory including: executable instructions(see column 24, lines 9-35,column 25, line 10 – column 26, line 10 );

storage for respective identifiers for respective peers of the end host in a peer-to-peer system (see column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); and an array for each said peer of the end host (see column 24, lines 9-35, column 25, line 10 – column 26, line 10 ), wherein: each said array includes one or more entries (see column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); and each said entry (see column 24, lines 9-35, column 25, line 10 – column 26, line 10 ): corresponds to one neighbor peer of one peer of the end host (NPOP) (see column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); and includes an identifier for the NPOP (see column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); a processor for executing the executable instructions which, when executed, interacts the end host as a peer in a peer-to-peer fashion in the peer-to-peer system (see column 18, line 63 – column 20, line 23; column 24, lines 9-35, column 25, line 10 – column 26, line 10 ).

As per claim 2, Hanson discloses the storage comprises a multilevel routing table cache (MRTC) (see column 2, lines 17-28; column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); each level in the MRTC has a maximum number of entries (see column 2, lines 17-28; column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); each level in the MRTC represents a segment of a number space corresponding to an identifier of the end host (see column 2, lines 17-28; column 24, lines 9-35, column 25, line 10 – column 26, line 10 ); the top level of the MRTC spans the entire number space (see column 2, lines 17-28; column 24, lines 9-35, column 25, line 10 – column 26, line 10 ).

);each successively lower level contains successively smaller spans(see column 2,lines 17-28; column 24, lines 9-35,column 25, line 10 – column 26, line 10 ); each said span in a level below the top level is a smaller segment than the entire number space(see column 2,lines 17-28; column 24, lines 9-35,column 25, line 10 – column 26, line 10 ); each said span is clustered around one said identifier of a corresponding said peer(see column 2,lines 17-28; column 24, lines 9-35,column 25, line 10 – column 26, line 10 ); and the relative proximity between the peers corresponds to the respective identifiers thereof(see column 2,lines 17-28; column 24, lines 9-35,column 25, line 10 – column 26, line 10 ).

As per claim 3, Hanson discloses forming a message for a destination said peer for which the identifier thereof is not found in the memory, wherein the message include the identifier of the destination said peer (see column 2,lines 17-28; column 3, line 57 – column 4, line 17; column, 15, lines 49-60; column 24, lines 9-35,column 25, line 10 – column 26, line 10 ); and addressing the message to an intermediate said peer for which the identifier thereof: is in the memory(see column 2,lines 17-28; column 3, line 57 – column 4, line 17; column, 15, lines 49-60; column 24, lines 9-35,column 25, line 10 – column 26, line 10 ); and is the proximally closest to the identifier of the destination said peer(see column, 15, lines 49-60; 10 ).

As per claim 4, Hanson discloses one said entry in one said array ; and the MRTC (see column 2,lines 17-28; column 3, line 57 – column 4, line 17;

column, 15, lines 49-60; column 24, lines 9-35, column 25, line 10 – column 26, line 10 ).

As per claim 6, Hanson discloses the interaction of the end host as a peer in peer-to-peer fashion in the peer-to-peer system comprises forming a message for delivery to a destination said peer via the one or more neighbor peers thereof (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, lines 49-60).

As per claim 7, Hanson discloses addressing a message for transmission to each said NPOP of the peer to which the end host is unable to communicate for further transmission therefrom to the peer to which the end host is unable to communicate (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48).

As per claim 8, Hanson the message includes a new IP address of the end host when the IP address of the end host has changed (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48).

As per claim 9, Hanson discloses the interaction of the end host as a peer in peer-to-peer fashion in the peer-to-peer system comprises registering one said identifier for the end host with each of the respective peers of the end host in the peer-to-peer system (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26, lines 36-60).

As per claim 10, Hanson discloses establishing a communication connection between the end host and one said peer of the end host (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26, lines 36-60) ; losing the established communication connection for a predetermined threshold (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26, lines 36-60) ; receiving a message from the one said peer of the end host containing a new IP address of the one said peer (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26, lines 36-60) ; and resuming, using the new IP address, the communication connection between the end host and one said peer of the end host (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23; column 24, lines 9-35, column 25, line 10 – column 26, line 10 column 26, lines 36-60).

As per claim 11, Hanson discloses the message is received via one said NPOP (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26, lines 36-60) .

As per claim 12, Hanson discloses relative proximity between the peers in the peer-to-peer system is a function of the proximity of the respective identifiers thereof (see column 2, lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26, lines 36-60) .



As per claim 13, Hanson discloses each said identifier of each said peer is a numerical expression(see column 2,lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26,lines 36-60) ; and relative proximity between the peers in the peer-to-peer system corresponds to numerical proximity of the respective identifiers thereof(see column 2,lines 17-28; column 3, line 57 – column 4, line 17; column, 15, line 49 – column 16, line 48; column 26,lines 36-60) .

As per claim 14, Hanson discloses each said array is a neighbor hint table (NHT) (see column 24, lines 9-35,column 25, line 10 – column 26, line 10 column 26,lines 36-60); and each said identifier for the NPOP comprises(see column 24, lines 9-35,column 25, line 10 – column 26, line 10 column 26,lines 36-60): an IP address of the respective said NPOP(see column 24, lines 9-35,column 25, line 10 – column 26, line 10 column 26,lines 36-60); a port number of the respective said NPOP (see Figure 17 and column 35, line 63 – column 36, line 59); and an ID generated from a public key of the respective said NPOP, wherein relative proximity between the NPOPs is a function of the proximity of the respective identifiers thereof (see column 13, lines 31-39; column 18, line 63 – column 20, line 23; column 24, lines 9-35,column 25, line 10 – column 26, line 10).

As per claim 15, Hanson discloses an IP address of the peer; and an ID generated from a public key of the peer, wherein relative proximity between the peer and other said peers in the peer-to-peer system is a function of the proximity of the respective identifiers thereof (see column 13, lines 31-39;

column 18, line 63 – column 20, line 23; column 24, lines 9-35, column 25, line 10 – column 26, line 10).

As per claim 16, Hanson discloses available bandwidth of the NPOP (see column 13, lines 40-57); proximity of the NPOP to the corresponding said peer of the end host (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23); degree of trust between the NPOP and the corresponding said peer of the end host (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23); probability that the IP address of the NPOP will change (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23); and a combination of the foregoing (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23).

As per claim 17, Hanson discloses logic for a kernel layer that has: an internet protocol (IP) layer having an end-to-end mobility module for end communications between the end host and another end host in the peer to peer system (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23); and a transport layer on the IP layer for communications across interconnected networks of the peer-to-peer system (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23); logic for an application layer on the kernel layer and having: a name resolution module for: resolving any said identifier for a respective said peer in the peer-to-peer system to IP address (see column 13,

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lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23); and storing the identifier of the respective said peers of the end host in the storage (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23 column 24, lines 9-35, column 25, line 10 – column 26, line 10); and a notification module on the name resolution module for: storing the identifier for each said NPOP in each said entry in each said array (see column 13, lines 31-39; column, 15, line 49 – column 16, line 48; column 18, line 63 – column 20, line 23 column 24, lines 9-35, column 25, line 10 – column 26, line 10).

As per claim 18, Hanson discloses the transport layer on the IP layer is a TCP UDP layer (column 4, lines 39-43).

As per claim 19, Hanson discloses each said peer in the peer-to-peer system is selected from the group consisting of: a cellular telephone; a computing device having a wired connection to the peer to peer system ; and a computing device having a wireless connection to the peer to peer system (see Figure 1).

As per claim 20, Hanson discloses receiving updates to the identifier for the NPOP for each entry in each array; and sending an updated IP address for the end host to each peer of the end host (column 17, line 64 – column 18, line 55).

As per claims 21-28 and 30, they do not teach or further define over the limitation as recited in claims 1-4 and 6-20. Therefore, claims 21-28 and 30 are rejected under same scope as discussed in claims 1-4 and 6-20, *supra*.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Braun US Patent Number 6,047,283 (hereinafter Braun).

As per claims 5 and 29, Hanson discloses a message can be delivered to a destination said peer from the end host by transmission via a number of said peers.

However Hanson failed to disclose enhanced searching computation used to improve or speed up search stored in memory, array or tree location.

Braun teaches such computation and formulation that shows a same searching and indexing relation for a message that can be delivered to a destination said peer from the end host by transmission via a number of said peers that is not more than  $O(\log_{\text{sub}.k} N)$  in average;  $k$  is the factor by which the spans of each said successively lower level is successively smaller; and  $N$  is

the number of said identifiers in an identifier naming space for the MRTC (see column 5, line 50 – column 6, line 60).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a method for searching strings that is, for certain applications, faster than any known search method; to provide a method for searching strings that is, for most applications, faster than linear searches, hash searches, or binary tree searches; to provide a method for searching strings that supports partial matches, such as wild cards at the character level; to provide a method for searching strings that supports generic indexing, including generic storing of partially specified strings within the index; to provide a method for searching strings that is particularly efficient for large string sizes; to provide a method for searching strings that has robustness against unequally distributed string distributions; to provide a method for searching strings that prevents the unbounded degeneration that occurs in binary trees or hash collision lists; to provide an implementation for searching strings that minimizes internal tree structure administration overhead. Therefore, even for tables that have fewer than 100 entries, the implementation disclosed will often be faster than linear searches and to provide an improved method of logical lock management in mobile communication environment

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See accompanying PTO. 892 form.

a. Mobile mesh Ad-Hoc Networking by Naghian et al. US Patent Number 6,879,574 B2.

b. Method and System For Peer-to-Peer Wireless Communication over Unlicensed Communication Spectrum by Serpa et al. US Publication Number 2005/0169219 A1.

9. A shortened statutory period for reply to this non-final action is set to expire **THREE MONTHS** from the mailing date of this action. Failure to respond within the period for response will result in **ABANDONMENT** of the applicant (See 35 U.S.C 133, M.P.E.P 710.02,71002 (b)).

### **Contact Information**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAKET K. DAFTUAR whose telephone number is (571)272-8363. The examiner can normally be reached on 8:30am-5:00pm M-W.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. K. D./

Examiner, Art Unit 2151

/John Follansbee/

Supervisory Patent Examiner, Art Unit 2151